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In This Issue

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Farewell

" *'But what am I to do?' said Alice. 'Anything you like,' said the Footman, and began whistling."* And what am I to do? My last day as health officer is June 30. I have worked with many of you since 1986 when I was hired for eight hours a week. That seems like a long time ago, before meningococcal serogroup B infection; before the measles outbreak of 1996 and the Battle Ground Lake-associated / *E.coli* / O157 outbreak of 1999; before September 11 and the anthrax attacks; before SARS and West Nile virus. Remember when Clark County had the disturbing reputation of having one of the highest rates of adult smoking in the State? Not anymore. This has been a wonderful community to work in and you have been outstanding colleagues to work with. Together we have served; we have healed; we have done good deeds; we have protected and improved the public's health. I wish I could thank everyone of you in person for your support and collaboration.

A very warm farewell,
Karen
June, 2004

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GC or not GC, that is the question: The possibility of false positive results for gonorrhea in women at low risk for sexually transmitted disease

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Case 1: *A white female in her 30's was seen for a physical examination and woman's health check. She had a slight vaginal discharge and no other symptoms. She was married and had been in a long-term monogamous relationship. A combined chlamydia/gonorrhea nucleic acid amplification test (NAAT) was obtained and results were positive for Neisseria gonorrhoeae. The patient questioned the accuracy of the test result and later went to another clinic for repeat testing. The results of the second test were negative for gonorrhea. Her husband was seen by his physician and tested two times. Both results were negative for chlamydia and gonorrhea*."

Background: During the period January through March 2004, Clark County health care providers and laboratories reported thirty-seven female cases of *N. gonorrhoeae* to the health department. The department's Disease Investigation Specialist (DIS) conducted standard interviews and identified several women for whom the positive results for gonorrhea were unexpected because they occurred in women who were either married or in long-term monogamous relationships and subsequent testing in the women or their partners was negative for *N. gonorrhoeae*. A systematic review noted 11 (30%) of the total 37 cases suggested false positive results. The women were understandably highly concerned about the situation. The DIS brought this issue to the attention of the Health Officer, prompting a larger investigation to determine the reasons for discordant laboratory results. For the purpose of this article we have included information from five case-patients. What follows is a summary of the investigation.

Case definition: *A false-positive case-patient was defined as a female patient reported to the health department, from January through March 2004, with gonorrhea based on a positive test by chlamydia/gonorrhea NAAT who did not have clinical symptoms suggestive of gonorrhea and who*
1. subsequently tested negative for N. gonorrhoeae without a course of antibiotics and/or
2. whose sexual partner tested negative for N. gonorrhoeae.

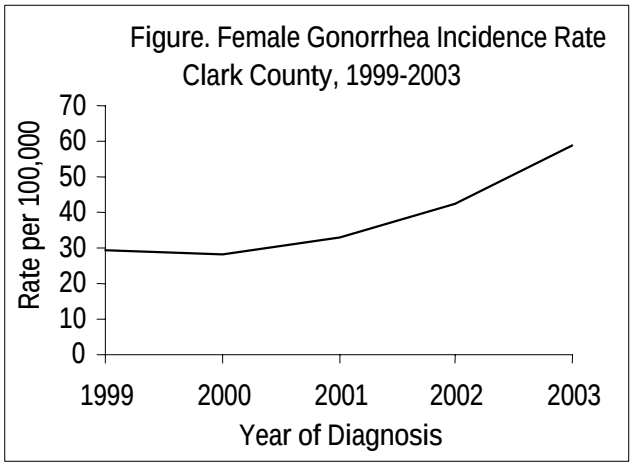
Investigation: Informed consent was obtained from the five case-patients. All five women had been screened for STDs using NAAT. The gonorrhea case report form was reviewed and abstracted. Incidence rates of gonorrhea in women in Clark County were calculated for the period 1999 through 2003 based on reported cases. Since January 2003, Clark County has been collaborating with CDC, Washington State Department of Health, and other local public health agencies in a supplemental gonorrhea behavioral surveillance project (Outcomes Assessment through Systems of Integrated Surveillance, OASIS). Oasis interviews from 25 women with positive results for gonorrhea reported January through March, 2004 were reviewed for information about sexual history.

Findings: Of the five case-patients, only one was noted to have a vaginal discharge as the reason for medical visit. All five women were considered low risk based on sexual history (i.e. marriage or only one sexual partner in the past 90 days) and three of the women were 30 years or older. In addition, two of the women without a course of medication had subsequent negative tests, and all five women identified one male partner, each of whom subsequently tested negative for *N. gonorrhoeae*, (Table). In 2003, 111 female cases of gonorrhea were reported to the department. This represented a 48% increase from 75 cases reported in 2002. Although, this continued an upward trend in the incidence of gonorrhea in women which had first been noted in 2001, the increase in 2003 was more marked, (Figure). Of interest, over 90% of the women interviewed in the Oasis study reported only one sexual partner in the previous three months and 36% were 30 years of age or older.

Table. Selected reports of unanticipated positive results for gonorrhea in female case-patients, Clark County, January through March 2004

Case	Age group	Reason for visit	Results of NAAT*		Partner result	Marital status Sexual history
			First test	Repeat test		
1	30-34	Routine	Positive	Negative	Negative	Married
2	20-24	Exposed to CT**	Positive	Negative	Negative	One partner
3	15-19	Routine	Positive	-	Negative	Married
4	30-34	Vaginal discharge	Positive	-	Negative	Married
5	40-44	Routine	Positive	-	Negative	One partner

*Nucleic Acid Amplification Test
***Chlamydia trachomatis* infection



Sensitivity, specificity and the importance of prevalence for deciding GC or not GC.
Sensitivity = the proportion of real (true) infections identified by a screening test, 80% to 90% for NAAT.
Specificity = the proportion of truly non-diseased people ruled out by the screening test, 97% to 99% for NAAT.
Positive Predictive Value = the probability that a person testing positive for a disease actually has this disease, which depends on the specificity and the prevalence of the disease in a given community. In Clark County the prevalence of gonorrhea in women is estimated to be <1%, meaning if 100 women at low risk for gonorrhea are screened with NAAT, only about 50% of those testing positive will actually have gonorrhea.

NAAT: There are currently three NAATs on the market and available in laboratories. Each of the three uses a different collection system. Therefore a specimen collected for one NAAT cannot be run on another NAAT. The basic principle behind all of these tests is to identify the presence of small specific GC DNA strands by making thousands to millions of copies. If GC is present then finding it changes from looking for a needle *in* a haystack (of DNA) to having an entire giant haystack of just GC DNA which is easy to find and identify. These tests do not require the preservation of live organisms. This results in several advantages for the test. The specimen requirements are less stringent as we do not need to keep GC bacteria alive. The tremendous "magnification" of the bacteria of interest (GC) makes it easy to find. Both of these features make NAATs much more sensitive for detecting the presence of GC bacteria in clinical specimens. The introduction of NAAT in the last few years is a step forward in laboratory science and an important technology for early detection of STDs. NAAT was introduced by Vancouver area laboratories in 2002 to 2003.

Discussion:
The five women in this case series were screened positive for gonorrhea using NAAT, but they were unlikely to have true gonococcal infection based on lack of symptoms, low risk sexual history, follow-up testing, and partner evaluation. In addition, enhanced interviews of women reported with gonococcal infection in 2004 did not find evidence of high risk sexual behavior*.

The evidence from this investigation suggests a positive test for gonorrhea in a woman without a risk history or symptoms may be a false positive and begs for further patient-provider dialogue. Similar findings of false positivity for gonorrhea using a specific NAAT have recently been reported[1]. From the perspective of women marked as having gonorrhea, who really do NOT have gonorrhea, this information may have huge social and psychological impact. Dear Abby summed it up, "[t]hese inaccurate tests have victimized many people by creating havoc in their marriages."[2] It is commendable that the DIS listened to these women and questioned the validity of the test results.

Recommendations:
For clinicians: When considering STD screening in sexually active women, it is advisable to take a sexual history to identify women at high risk. At a minimum, we suggest asking these three questions:
1. Are you sexually active with men, women, or both?
2. How many partners have you had in the last year?
3. Does your male sexual partner have sex with men?
Also, it is important to interpret test results in the context of age, sexual history, and physical examination. In Washington State and Clark County, the highest incidence of gonorrhea is reported in 15 to 24 year olds, so a clinician might question a positive result for gonorrhea in an older woman. To be on the safe side, for patients with a positive test for gonorrhea, it is a good idea to offer treatment right away, but also tell them it would be okay to wait to treat while another test was pending, as long as they were asymptomatic and did not expose anyone new. If the patient is younger than 25 years old, you might want to encourage treatment. The health department is available for consultation whenever there are questions.

For laboratorians: When STD screening is conducted in a population with low prevalence, CDC advises "consideration should be given to routinely performing an additional test after a positive screening test, if the positive predictive value is considered low, (e.g. < 90%)."[3]

*A "common sense" definition of women at high risk of acquiring gonorrhea includes those who have multiple sequential or concurrent sex partners; women who have sex with men who have sex with men; and women with a history of gonococcal infection in the past 12 months.

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[1] Katz AR, Effler PV, Ohye RG, Brouillet B, Lee MVC, Whiticar PM. False-positive gonorrhea test results with a nucleic acid amplification test: the impact of low prevalence on positive predictive value. Clin Infect Dis 2004; 38:814-19.
[2] Van Buren A. *Errors in venereal-disease tests can put strain on marriage.* The Seattle Times 1990 October 15; Sect. E:9.
[3] Centers for Disease Control and Prevention. Screening tests to detect *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infections - 2002. MMWR Morb Mortal Wkly Rep 2002;51(RR-15):1-40.

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CDC Clinician Registry

The Clinician Registry for Terrorism and Emergency Response Updates and Training Opportunities is a CDC listserve developed to enable rapid dissemination of information pertaining to emergent diseases, terrorism, and other health-related issues to clinicians throughout the United States. Through the registry, CDC informs clinicians of recent changes to information and guidance and announces training opportunities related to terrorism and emergency response topics. Clinicians may subscribe to the listserve via the CDC website: http://www.bt.cdc.gov/clinregistry/

HIV: Stopping the Spread

Recent publicity regarding the Thurston County HIV assault case, whose behavior endangered public health, serves as a reminder of the responsibilities public health and health care providers have in the prevention of spread of HIV infection.

Health care providers are required by state law to report HIV cases to the health department, and to assure patient education on infection control measures, and partner notification. Health care providers with knowledge of a patient's failure to comply with infection control measures, should contact the health department.

To assist you, the Clark County Health Department has skilled staff to provide confidential HIV counseling and testing, partner notification, case management, and follow-up with persons whose behaviors continue to expose others to HIV.

For further information on HIV services, call Alice Powers, PHN, at (360) 397-8425.

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